

TROPICAL STORM MARTY (16W)

BEST TRACK-TC 16W

11 AUG - 17 AUG 96

MAX SFC WIND 50 KT

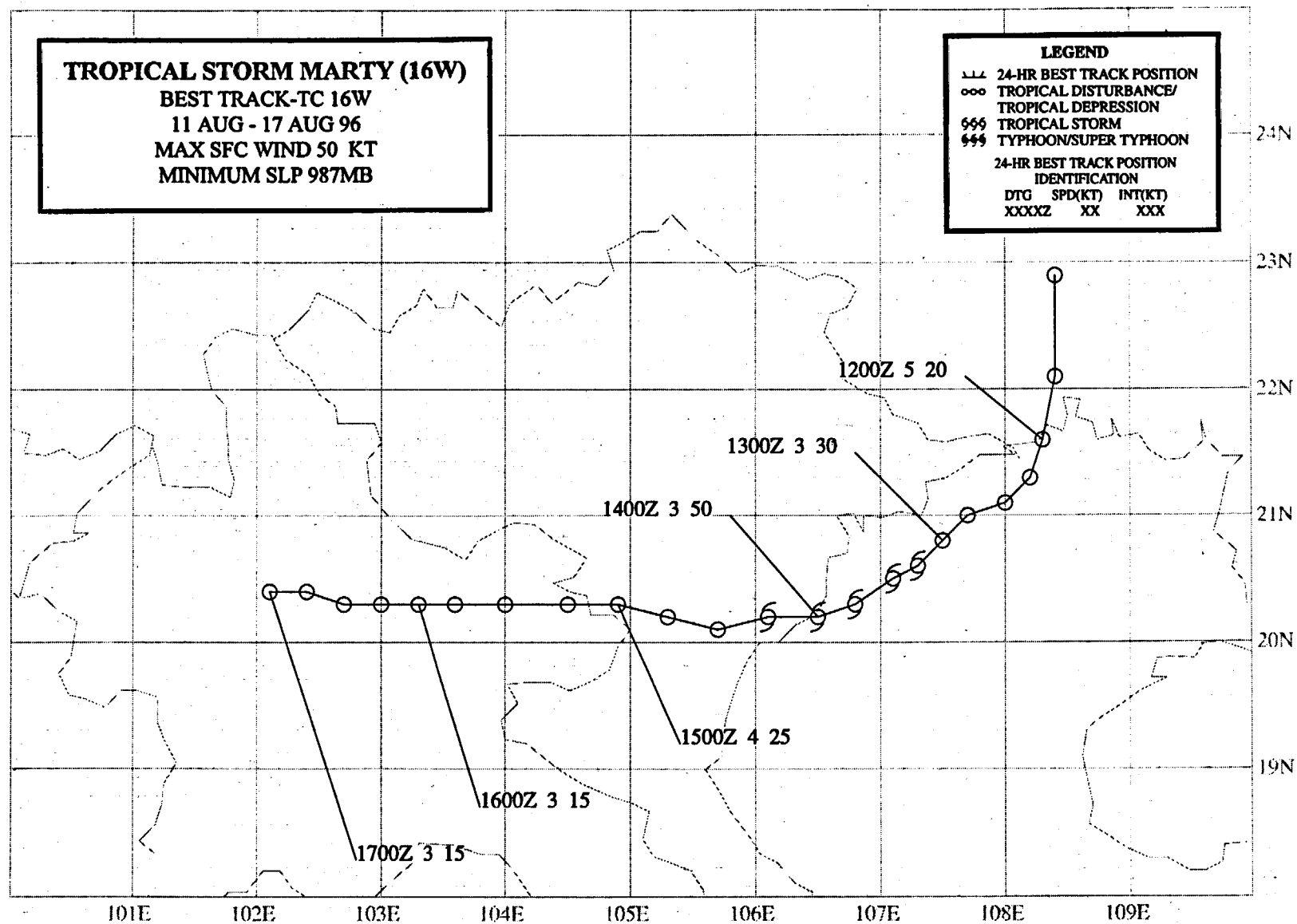
MINIMUM SLP 987MB

LEGEND

- 24-HR BEST TRACK POSITION
- ooo TROPICAL DISTURBANCE/
TROPICAL DEPRESSION
- 666 TROPICAL STORM
- 666 TYPHOON/SUPER TYPHOON

24-HR BEST TRACK POSITION
IDENTIFICATION

DTG	SPD(KT)	INT(KT)
XXXXZ	XX	XXX



TROPICAL STORM MARTY (16W)

I. HIGHLIGHTS

Developing in the Gulf of Tonkin, Marty was a very small tropical cyclone. In real time, satellite intensity analyses did not agree with synoptic data and with news reports of the devastation of Vietnamese fishing boats in the Gulf of Tonkin where 125 people were reported killed and another 107 missing. Marty was upgraded to a tropical storm after it had crossed the coast because synoptic data indicated that gales were present along the coast and over waters to the east. The final best track increases Marty to a tropical storm while it was over the Gulf of Tonkin and raises its peak intensity from 35 to 50 kt.

II. TRACK AND INTENSITY

Marty originated in the monsoon trough over land in southwestern China. Though first mentioned on the 130600Z August Significant Tropical Weather Advisory, the area of deep convection that became Marty could be identified (in post analysis) as early as 11 August (Figure 3-16-1). The pre-Marty disturbance moved southward into the Gulf of Tonkin and intensified. Based on indications from satellite and synoptic data that the system had moved over water, the first warning (valid at 130600Z August) was issued on Tropical Depression (TD) 16W. The TD then turned more to the west, and shortly after 140000Z (after a short path over water) it made landfall about 60 nm (110 km) south of Hanoi. Although over land at 140600Z, TD 16W was upgraded to Tropical Storm Marty when synoptic data indicated that gales were occurring along the coast and over water to the east. The upgrade to a tropical storm after the system made landfall is unusual, but it was realized the intensity of Marty had been underestimated. Ironically, the warning that upgraded Marty to a tropical storm was also the final warning, since the system was then weakening over land.

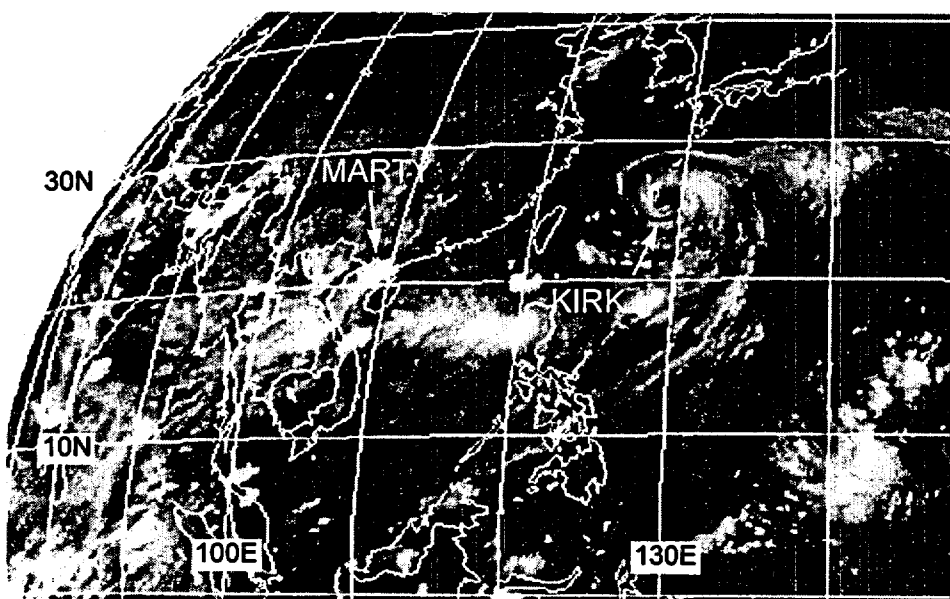


Figure 3-16-1 The disturbance that became Marty formed in southwestern China along the axis of the monsoon trough (111831Z August infrared GMS imagery).

III. DISCUSSION

The importance of post analysis

A comprehensive post analysis provides insight into the behavior of a TC in a specific situation. The goal of such an analysis is to produce a more exact, definitive product from the usually vague, imprecise, and often incomplete real-time data input. In the case of Marty, there was very lit-

the synoptic data available in the region. When the TC made landfall in Vietnam, crucial synoptic data (including a scatterometer pass) became available which indicated Marty was more intense than

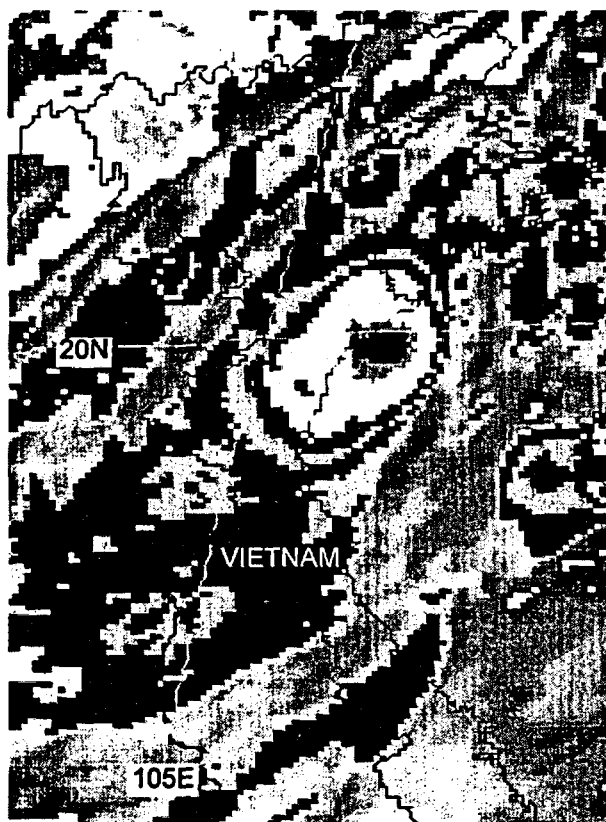


Figure 3-16-2 Exhibiting a CDO pattern, the very small Marty attains its peak intensity of 50 kt (26 m/sec) while over the Gulf of Tonkin (132131Z August enhanced infrared GMS imagery).

thought. Also hindering an accurate assessment of Marty's intensity was its small size (Figure 3-16-2) which biased the satellite intensity estimates on the low side. A careful review of Marty was conducted and it included a reassessment of intensity estimates from satellite imagery (Table 3-16-1). Concerning Marty's intensity, the following was noted by the reassessment team:

"TS Marty was close to a midget in size. Dvorak [satellite intensity estimates] did not appear to coincide with synoptic data and news reports of 'whirlwind destroying numerous fishing boats with the loss of from 125 to 232 people'. All T number [intensity estimates] . . . were 0.0 [less than 25 kt] except for a T2.0 . . . at 13/1730Z just before it went on shore in Vietnam. Pressures were below 997 mb within 60 nm of the circulation center — lots of room for greater intensity of the cyclone if it was 'truly' a midget".

Figure 3-16-3 is satellite imagery on 13 August originally thought to indicate wind speeds less than 25 kt (13 m/sec), but in post analysis was considered to be indicative of 30 kt (15 m/sec). Figure 3-16-2 (and later visible imagery — not shown) was reassessed to be indicative of an intensity of 50 kt (26 m/sec).

IV. IMPACT

News out of Vietnam claimed that a "whirlwind" capsized fishing boats along the northern Vietnamese coast, killing at least 125 people with another 107 missing and feared dead.

Table 3-16-1 Reanalysis of satellite intensity estimates used to support Marty's best track.

DTG	New T Number	Intensity (kt)	Old T Number	Intensity (kt)
12/03Z	1.0	25	0.0	<25
13/03Z	2.0	30	0.0	<25
13/09Z	2.5	35	0.0	<25
13/21Z	3.5	55	2.0	30

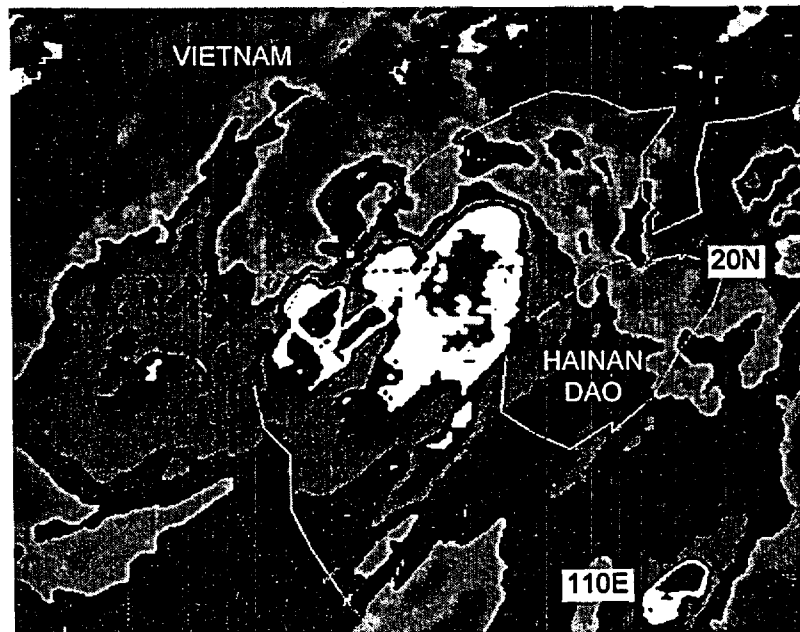
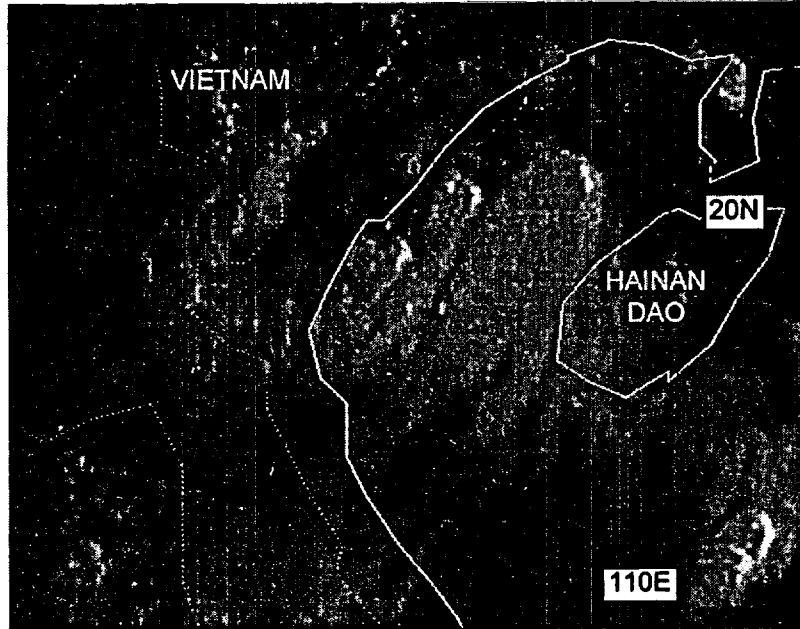


Figure 3-16-3 This satellite imagery of the tropical disturbance that became Marty was reassessed to be indicative of 30 kt (15 m/sec) intensity instead of the original diagnosis of less than 25 kt (13 m/sec) ((a) 130031Z August visible GMS imagery, and (b) 130031Z enhanced infrared GMS imagery).